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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,896	04/18/2001	Shivi Fotedar	3981-12	8334
27683	7590	07/21/2005	EXAMINER	
HAYNES AND BOONE, LLP 901 MAIN STREET, SUITE 3100 DALLAS, TX 75202			MEW, KEVIN D	
			ART UNIT	PAPER NUMBER
			2664	

DATE MAILED: 07/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/837,896	<b>Applicant(s)</b> FOTEDAR, SHIVI	
	<b>Examiner</b> Kevin Mew	<b>Art Unit</b> 2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Final Action***

***Response to Amendment***

1. Applicant's Remarks/Arguments filed on 1/18/2005 regarding claims 1-19 have been fully considered and are currently pending.
2. Acknowledgement is made of the amended abstract regarding the deficiency cited in the specification of the previous Office Action. The correction is acceptable and the objection to the specification has been withdrawn.
3. Acknowledgement is made of the amended claims 13 and 17 regarding the claim objections cited in the previous Office Action. The correction is acceptable and the claim objections to claims 13 and 17 have been withdrawn.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rao (USP 6,789,118).

Regarding claim 1, Rao discloses a network processing device, comprising:

packet processing circuitry (see the circuitry in the multi-service network switch, col. 3, lines 53-54 and Fig. 1) adapted to receive an address request from any one of multiple processors (forwarding module FM; note that each slot on the switch accommodates a single interface FM module or card, see col. 3, lines 56-58) in the network processing device, the packet processing circuitry adapted to output the address request to a network (the IP forwarder in each FM provides the necessary packet forwarding and route processing intelligence and searches the ARP table for the destination address of an IP packet and sends out a MARP request for the destination address, see col. 10, lines 29-31 and col. 11, lines 17-20 and col. 13, lines 36-46) and to receive an address reply to the address request (a MARP response packet is sent back to the originating FM so that the ARP table is updated with the destination address information, see col. 13, lines 43-46); and

Rao does not explicitly show the packet processing circuitry adapted to multicast the address reply to multiple ones of the processors at the same time. However, Rao discloses that cell buses move user traffic between the FMs using the multicast circuitry and the IP cache residing in each of the FMs includes a list of the most recently IP source/destination address pairs, along with the physical port address and header information (see col. 5, lines 21-23 and col. 12, lines 15-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multicast circuitry of the multi-service network switch with the method of updating and storing a list of the most recently port address in the IP cache such that the multicast circuitry will multicast the physical port address reply to the FMs at the same time. The motivation to do so is to speed up the address updating process of the IP cache

residing in each of these FMs that is interested in receiving the latest address information because using the multicast technique to forward address information will conserve bandwidth and reduce traffic by simultaneously delivering a single stream of information to a group of recipients.

Regarding claim 2, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above. Rao further discloses a network processing device according to claim 1 wherein one or more of the multiple processors provide address resolution management that matches IP addresses with Media Access Control (MAC) addresses (the IP forwarder of the forwarding module obtain address information from the ARP table through a management ARP request and the ARP table resolves the IP addresses to MAC addresses, see col. 2, lines 40-41, col. 11, lines 17-20, col. 12, lines 31-37, and element 44, Fig. 2).

Regarding claim 3, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above. Rao further discloses a network processing device according to claim 1 wherein the packet processing circuitry is located in a line card (the circuitry in the multi-service network switch includes a redundant bus architecture for interconnecting the FMs, see col. 4, lines 64-65 and the bus lines in Fig. 2) and the multiple CPUs are located in one or more control cards (each FM is a single interface card, see col. 3, lines 56-58).

Regarding claim 4, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above. Rao further discloses a network processing device according to claim

1 wherein the address request comprises an Address Resolution Protocol (ARP) request and the address reply comprises an Address Resolution Protocol (ARP) reply (see col. 13, lines 33-46).

Regarding claim 5, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above. Rao further discloses a network processing device according to claim 1 including address tables (ARP tables) associated with each of the multiple processors (ARP tables are associated with forwarding modules FMs, see Fig. 4), the processors in parallel (see FMs in parallel, Fig. 1) each adding an IP address and associated Media Access Control address to the associated address tables received in the multicast address reply (IP address and MAC address are added to the ARP table, see col. 12, lines 31-37 and Fig. 8).

Regarding claim 6, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above. Rao further discloses a network processing device according to claim 1 wherein the packet processing circuitry (the multi-service network switch provides a generic forwarding interface GFI to enable distributed multicasting by using a port addressing scheme to forward packets anywhere in the switch, see col. 27, lines 22-32) converts the address reply from one or more unicast packets to one or more multicast packets and sends the multicast packets to each of the processors at the same time (GFI allows distributed multicasting by sending a packet to a multicast group where each of the recipient cards of the multicast group receives the packet, see col. 29, lines 13-20).

Regarding claim 7, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above. Rao further discloses a network processing device according to claim 1 including a switch fabric (see generic forwarding interface GFI, Fig. 4) coupled between the packet processing circuitry and the processors, the switch fabric including separate egress ports for separately sending the same address reply to each one of the processors (GFI of the IP forwarder module allows distributed multicasting by sending a packet to a multicast group where each of the recipient cards of the multicast group receives the packet, see col. 29, lines 13-20 and Fig. 4).

Regarding claim 8, Rao discloses a method of updating addresses, comprising:

    sending the packet out with the first address to another network device (FM places the MARP requests in front of the IP packet and forwards the IP packet out the appropriate interface such as an Ethernet network device, see col. 13, lines 38-39 and PM 12a, Fig. 1);

    receiving an address request from one or more of the applications or processors for a second address associated with the first address (receiving a management ARP request associated with the IP address from the IP forwarder module of the FM for the destination port address associated with the IP address, see col. 13, lines 33-41);

    sending the address request over a network (broadcasts the MARP request out on the management bus (see col. 13, lines 39-40);

    receiving an address reply from the network identifying the second address associated with the first address (originating FM receiving a MARP response packet so that the FM's ARP table can be updated with the port address information, see col. 13, lines 43-46); and

Rao does not explicitly show the method of broadcasting the address reply to multiple ones of the applications or processors at the same time. However, Rao discloses that cell buses move user traffic between the FMs using the multicast circuitry and the IP cache residing in each of the FMs includes a list of the most recently IP source/destination address pairs, along with the physical port address and header information (see col. 5, lines 21-23 and col. 12, lines 15-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multicast circuitry of the multi-service network switch with the method of updating and storing a list of the most recently port address in the IP cache such that the multicast circuitry will broadcast the physical port address reply to the FMs at the same time. The motivation to do so is to speed up the address updating process of the IP cache residing in each of these FMs because using the broadcast technique of forward address information will conserve bandwidth and reduce traffic by simultaneously delivering a single stream of information to a group of recipients.

Regarding claim 9, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 8 above. Rao further discloses a method according to claim 8 including using an Address Resolution Protocol (ARP) to send the address request and receive the address reply (see col. 13, lines 33-46).

Regarding claim 10, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 8 above. Rao further discloses a method according to claim 9 including



broadcasting the ARP reply to the multiple applications or processors by designating the ARP reply packets as multicast packets.

Regarding claim 11, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 8 above. Rao further discloses a method according to claim 8 including individually updating address tables associated with each one of the applications or processors with the second address from the second address from the address reply (see col. 12, lines 16-20 and col. 13, lines 33-46).

Regarding claim 12, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 8 above. Rao further discloses a method according to claim 8 wherein the first address is an Internet Protocol address and the second address is a Media Access Control (MAC) address (see col. 12, lines 31-37).

Regarding claim 13, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 8 above. Rao further discloses a method according to claim 8 including broadcasting the address reply from a line card in a network processing device to the multiple applications or processors in one or more control cards in the same network processing device (GFI of the IP forwarder module, see Fig. 4 allows distributed multicasting by sending a packet to a multicast group where each of the recipient cards of the multicast group receives the packet, see col. 29, lines 13-20, and col. 27, lines 22-32).

Regarding claim 14, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 8 above. Rao further discloses a method according to claim 8 including receiving the packet with the first address from an IP network and sending the address request to endpoints in an Ethernet network (see col. 4, lines 16-22, and elements 10, 12a, Fig. 1).

Regarding claim 15, Rao discloses a network processing device, comprising:  
multiple processors for controlling operations in the network processing device  
(forwarding modules FMs for providing on-board intelligence, route forwarding, and route processing information distributed packet routing for the multi-service network switch, see col. 3, lines 53-60); and

Rao does not explicitly show the packet processing circuitry (see Fig. 1) adapted to detect unicast control packets from a network and convert the unicast control packets into a multicast control packets that are relayed in parallel to the multiple processors at the same time. However, Rao discloses that cell buses move user traffic between the FMs using the multicast circuitry and the IP cache residing in each of the FMs includes a list of the most recently IP source/destination address pairs, along with the physical port address and header information (see col. 5, lines 21-23 and col. 12, lines 15-23). Rao further discloses the method of allowing distributed multicasting by sending a packet to a multicast group where each of the recipient cards of the multicast group receives the packet (see col. 29, lines 13-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multicast circuitry of the multi-service network switch with the method of updating and storing a list of the most recently port address in the IP cache such

that the multicast circuitry will multicast the physical port address reply, which is received as a unicast packet, to the FMs at the same time. The motivation to do so is to speed up the address updating process of the IP cache residing in each of these FMs that is interested in receiving the latest address information because using the multicast technique to forward address information will conserve bandwidth and reduce traffic by simultaneously delivering a single stream of information to a group of recipients.

Regarding claim 16, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 15 above. Rao further discloses a network processing device according to claim 15 wherein the control packets comprise address resolution protocol packets (management ARP response packet, see col. 13, lines 33-46).

Regarding claim 17, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 16 above. Rao further discloses a network processing device according to claim 16 including multiple network interfaces (forwarding modules FMs, see element 10, Fig. 1) each coupled to different ports (see Fig. 1) and adapted to detect replies to address resolution requests (the IP forwarder module of FM invokes an management ARP request to discover the destination address, see col. 2, lines 52-53, col. 13, lines 33-41, and Fig. 9) and.

Rao does not explicitly show broadcasting the detected replies to the multiple processors. However, Rao discloses that cell buses move user traffic between the FMs using the multicast circuitry and the IP cache residing in each of the FMs includes a list of the most recently IP source/destination address pairs, along with the physical port address and header information

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(see col. 5, lines 21-23 and col. 12, lines 15-23). Rao further discloses the method of allowing distributed multicasting by sending a packet to a multicast group where each of the recipient cards of the multicast group receives the packet (see col. 29, lines 13-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multicast circuitry of the multi-service network switch with the method of updating and storing a list of the most recently port address in the IP cache such that the multicast circuitry will broadcast the physical port address reply, which is received as a unicast packet, to each of the FMs at the same time. The motivation to do so is to speed up the address updating process of the IP cache residing in each of these FMs that is interested in receiving the latest address information because using the broadcast technique to forward address information will conserve bandwidth and reduce traffic by simultaneously delivering a single stream of information to a group of recipients.

Regarding claim 18, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 16 above. Rao further discloses a network processing device according to claim 16 including address tables (ARP tables) associated with each one of the multiple processors (ARP tables are associated with forwarding modules FMs, see Fig. 4), the processors updating the associated address tables with an address contained in the address resolution protocol packets reply multicast from the packet processing circuitry (IP address and MAC address are added to the ARP table by the IP forwarder of the FM module, see col. 12, lines 31-37 and Fig. 8).

including address tables (ARP tables) associated with each of the multiple processors (ARP tables are associated with forwarding modules FMs, see Fig. 4), the processors in parallel (see FMs in parallel, Fig. 1) each adding an IP address and associated Media Access Control address to the associated address tables received in the multicast address reply (IP address and MAC address are added to the ARP table, see col. 12, lines 31-37 and Fig. 8).

Regarding claim 19, Rao discloses all the aspects of the claimed invention set forth in the rejection of claim 16 above. Rao further discloses a network processing device according to claim 15 including a switch fabric (cell buses, see element 20, Fig. 1) having individual egress ports coupled to each one of the multiple processors (see ports that are coupled to the FMs, see element 10, Fig. 1). Rao does not explicitly show each one of the egress ports sending control packets from the packet processing circuitry in parallel to the multiple processors at the same time.

However, Rao discloses that cell buses move user traffic between the FMs using the multicast circuitry and the IP cache residing in each of the FMs includes a list of the most recently IP source/destination address pairs, along with the physical port address and header information (see col. 5, lines 21-23 and col. 12, lines 15-23). Rao further discloses the method of allowing distributed multicasting by sending a packet to a multicast group where each of the recipient cards of the multicast group receives the packet (see col. 29, lines 13-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multicast circuitry of the multi-service network switch with the method of updating and storing a list of the most recently port address in the IP cache such

that the multicast circuitry will multicast the physical port address reply, which is received as a unicast packet, to the FMs at the same time. The motivation to do so is to speed up the address updating process of the IP cache residing in each of these FMs that is interested in receiving the latest address information because using the multicast technique to forward address information will conserve bandwidth and reduce traffic by simultaneously delivering a single stream of information to a group of recipients.

### *Response to Arguments*

Applicant's arguments filed on 1/18/2005 have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness regarding "multicasting address reply to multiple ones of the processors at the same time" is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that Rao does not teach the line card receiving an address request from a control card and multicasting a corresponding address reply to multiple control card CPUs, it is noted that Rao discloses receiving unicast packets to GFI backplane (line card receiving an address request from a control card, see col. 29, lines 13-19) and then

distributing the packets to multiple ports (multicasting a corresponding address reply to multiple control card CPUs, see col. 29, lines 13-19).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "the ARP request is output to a network and the address reply is an ARP reply received from a network") are disclosed by Rao (see col. 13, lines 41-46). Since the applicant did not explicitly define what the network in claim 1 represents, Fig. 1 of Rao is interpreted as a network formed by the combined system of forwarding modules, Primary SCM, Secondary SCM, buses, and different protocol interfaces such as Ethernet, ISDN, digital modems, frame relay and T1/E1.

In response to applicant's argument that the references fail to show a fabric with separate egress ports, it is noted that Fig. 1 shows a GFI backplane with media port driver(s), which suggests a plurality of egress media ports will be supported.

In response to applicant's argument that Rao fails to teach readdressing a unicast packet to a multicast packet, it is noted that Rao discloses receiving an unicast packet to GFI backplane (line card receiving an address request from a control card, see col. 29, lines 13-19) and then distributing the packet to multiple ports (multicasting a corresponding address reply to multiple control card CPUs, see col. 29, lines 13-19).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "detecting ARP replies from the network") is not recited in the rejected claim 17. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "each processor updating a corresponding address table with an address contained in the multicast ARP reply packet") is not recited in the rejected claim 18. The claim only recites the processors updating and does not explicitly claim each of the processors. Therefore, it is interpreted that if one FM records one MARP, then multiple FMs would record multiple MARPs, which reads on the claim. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

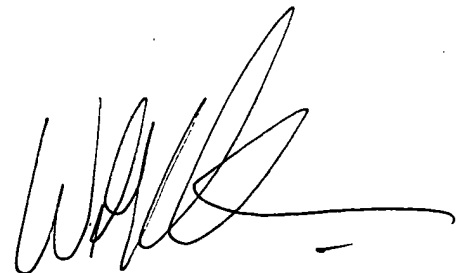


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 703-305-5300. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 703-305-4366. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**WELLINGTON CHIN**  
**SENIOR PATENT EXAMINER**